

## Synthesis of Nitrogen-doped TiO<sub>2</sub> and Their Photocatalytic Activity under Visible Light

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Photocatalyst is a promising material for the energy and environment issues. It produces electrons and holes under the light which energy is larger than the band gap energy. Titanium oxide is widely used because it has an appropriate redox potential and is chemically inert. But it cannot absorb visible light due to its large band gap energy. Nitrogen doping is known to be an effective way to reduce the band gap energy. In this research, nitrogen-doped titanium oxide is synthesized by mainly three methods; Precipitation method, Hydrothermal reaction and Ammonolysis. In addition, the comparison among these methods is conducted. Each sample is characterized by UV-Vis DRS, X-ray diffraction, Scanning electron microscopy, X-ray photoelectron spectroscopy and BET surface area analysis. Organic dye (orange2) decomposition reaction takes place to measure photocatalytic activity under visible light.